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(54) Title: ULTRASONIC APPARATUS AND METHOD FOR MEASURING THE CONCENTRATION AND FLOW RATE OF GAS
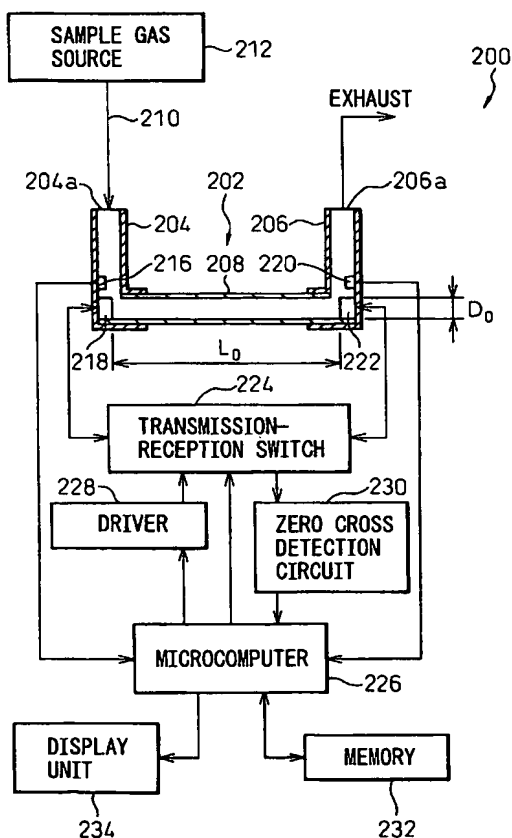
(57) Abstract: ABSTRACT An ultrasonic apparatus measures the concentration and flow rate of a sample gas by calculating a possible propagation time range on the basis of the gas temperature, determining whether or not the phases at which two first trigger signals, respectively generated on the basis of forward and backward waveforms of the ultrasonic waves, coincide with each other, processing the zero-cross signals so that the phases coincide with each other, obtaining reference zero-cross time instant by calculating mean value of the forward and backward zero-cross time instants, obtaining an ultrasonic reception point by subtracting an integral multiple of the cycle of the ultrasonic waves so that the results of the subtraction falls into a possible propagation time range and estimating the ultrasonic propagation time on the basis of the ultrasonic reception point.

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